CLAIMS:

What is claimed is;

1. For mechanical Computer Sub-systems with DECIMAL operating capability:

A method of positional encoded signal transmission using a singular moving particle mechanical impulse means moving from device to device through a mechanical BUS means, and where sources of such mechanical BUS impulses comprise one or more signal originators mixed by separately merging into each defined signal path, and with this said data transfer method comprising;

(a.) providing one or more synchronizing signal origination means that dispense a singular field-accelerated particle with a motion vector, and main path, principally induced by the field, including providing means for conflux signal mixing for the case of multiple origination sources;

(b.) providing in each said origination means a secondary use of the synchronizing signal by positional variation of dispensing causing multiple parallel path differentiation of the signal for transmitting useful information, and with the positional variation substantially orthogonal (normal) to the main path of travel;

(c.) providing a general mechanical computer logic element means and providing positional (spatial) differentiated inlet and outlet path means on said logic element means such that in all cases a moving particle impulse means will enter, interact, and exit as a flow-through function, and subsequently continue transit;

(d.) providing a structure means principally aligned with said accelerating field for aligned attachment of each of said origination means and said logic element means to said accelerating

field, and to each other;

(e.) providing basic structural alignment and serial connection relationships between said signal origination means, said transmission path, and said logic means, such that said origination means may usefully encode and transmit the impulse, which is then maintained during transit by the conduit means, and such that useful reception and differentiation of the impulse can be made by said logic means;

(f.) providing a conduit means for unconditional guiding of said impulse for simple offsets in which signal meanings are maintained between system components, and for useful logical conversions, in which general predetermined signal connections are made;

(g.) providing internally within all device components a means for complying with a unifying rule set for construction and external operation, these being defined under the immediately following claim subsection rule list, using a novel external system rule set called DISCRETE BUS;

(1.) a DISCRETE BUS rule for singular, mutually exclusive, moving particle transmission to a device in one main down-field direction and specifying a linear set of integer values (scalers), corresponding with quantized segments of a spatial displacement encoding vector orthogonal to the main transmission direction, and with use of said secondary direction axis having a shorthand term of positional encoded WRITE data BUS;

(2.) a DISCRETE BUS rule for initiating data outlet transmission for a READ operation from a device using a single synchronizing inlet strobe signal stimulus clock, called READ-SYNC where said resulting device data transmission has the said positional encoded form, and furthermore clarifying that definition of said READ-SYNC clock, being a system control, does not conflict with the statement that the BUS DATA WRITE method is self-clocking;

(h.) an initiating first action step in which said originating means dispenses a particle, in said positional encoded form, to said mechanical bus means;

(i.) a second step, a resulting guided propagation, which is movement of the particle, mechanically independent from the dispensing action, in which the particle mass-impulse transits both according to the main acceleration induced path and according to any secondary normal axis path but with any such secondary change not altering the ultimate encoded integer identity of such positional encoded data transmission;

(j.) a third step, of resulting propagation through the logic means and in which a processing function occurs, chosen from;

(1.) modification of positional encoding of the input impulse by creating a newly encoded output BUS impulse, re-using the same said singular moving particle both as a virtual synchronizing clock, and as an encoded data digit and where such internal logical modification processing includes the mathematical identity function having no logical change where said output encoding vector is identical to the said input vector but translated spatially, according to device housing spatial variations of offsets of outlets, and with said spatial translation including the case for zero translation offset in the directions normal to the main travel path and with said unchanged logical definitions on the BUS moving data path forcing a continuous re-definition of the relative axis origin, along each infinitesimal segment of the BUS transmission path;

(2.) modification of internal positional state encoding of the logic means, where such encoding affects future function response to the next arriving BUS transmission;

(k.) a final action step of resulting emission, where said logic means dispenses the said newly encoded BUS impulse for subsequent transmission, and with such dispensing allowing said

logic to constitute yet another said origination means in further serial chaining to additional multiple serial logic means;

whereby

the DISCRETE BUS method features discrete sampling of a continuous analog range, by the inclusion of the separator walls of the conduit means, and operation of the bus is possible by eliminating said signal separator walls for temporary analog data transmission which can be re-quantized,

and whereby

the conclusion may be drawn that the said impulsive and positional encoded nature make the signal simultaneously both self-clocking and multi-state, where comparatively, the conventional electronic clocked binary method presents one of two voltage states on one connection / transmission wire and then a separate clock impulse, also having two states, on a second connection / transmission wire, and the conclusion is drawn that the mechanical computer DISCRETE BUS operates as a set of signals, each in BASE ONE, for providing operation in any other number base by grouping of said set of signals.

2. For the data transmission method and BUS interface of claim #1, where a novel signal is added to the DISCRETE BUS signal set definition, called SELECT, and where SELECT is for initializing a device module, with an arrival of a first transmission of SELECT, a means for the time-multiplexed differentiation of a second from subsequent arriving DISCRETE BUS transmissions, and where said second arriving transmission initiates internal actions of state changes for processing, and also including a separate internal mode switch to data transparent mode, by serial re-use of the said arriving second transmission which cancels the initial internal state produced by SELECT and where subsequent arriving transmissions utilize such variable internal device states for varied functions, whereby such grouping or bundling of DISCRETE BUS signals with a SELECT signal is called a MUX-BUS;

and whereby

the claim is made that said internal mode switch, after a second arriving transmission is facilitated by the novel DISCRETE BUS feature of having one and only one BUS signal, and using a read and clear functionality depending on said mutually exclusive single signal definition, as opposed to a parallel data BUS which would have a disadvantage of not being perfectly time-coordinated across all binary bits;

whereby, in conclusion of this claim,

said MUX-BUS constitutes an operating and sequencing arrangement where a first variable (**N**), (second transmission, after SELECT) configures the functional response (1 of **N**) of a device to subsequent one or more variables and whereby some non-limiting examples of said varied device functions (1 of **N** varieties) are chosen from the following list of varieties:

(1.) an internal device processing function selection of INCREMENT, of a single variable **X**, which arrives as the third transmission, with a resulting output of the answer value (**X+1**) as a DISCRETE BUS transmission;

(2.) an internal device processing function selection of MULTIPLY, of two subsequent arriving variables (**X,Y**), the third and fourth arriving BUS transmissions;

(3.) an internal device processing function of COSINE, where two subsequent arriving decimal digits are used internally as time-multiplexed high (decade) and low (units) digit inputs (or HL), in the range of 0 through 99 degrees and where said digit inputs constitute literally an input to create a BASE 100 number input value, or often called RADIX 100;

(4.) an internal device path addressing processing, or physical motor function of BUS SWITCH **840**, where the function specifying **N** gives the data transparent commutator position resulting from said motor internal re-positioning, for sending multiple subsequent arriving general DISCRETE BUS transmissions out of 1 of **N** output BUS ports;

(5.) an alternate defined similar use of BUS SWITCH **840**, where the two said subsequent arriving transmissions after SELECT are (**X,Y**) for a two axis positional encoded output, physically in an (**X,Y**) array, for use where **X** internally determines the ROW BUS output, as a BUS port, and the **Y** value commutated to said BUS port inherently determines the COLUMN output, by virtue of the **Y** value transmission DISCRETE BUS form having a linear positional encoding;

(6.) another alternately defined similar use of BUS SWITCH **840** where, also referring back to example #3, the 100 input values obtained from the switch are then output arranged physically linearly to create another said defined positional encoded

DISCRETE BUS, in BASE 100;

(7.) a separate data READING access feature for reading two digit processing answer results from a standard MUX-BUS device, to create by originating a MUX-BUS defined output where said originated second and third MUX-BUS transmissions arriving at the device have the novel feature that both are READ requests, re-using said DISCRETE BUS READ-SYNC clocking signal of claim #1, and where physically said transmissions are identical to the said data WRITING (to a target device) transmissions, within this said MUX-BUS operating definition;

and furthermore,

the result of WRITING these said MUX-BUS inputs SELECT, first READ-SYNC, and second READ-SYNC, is that the two READ output transmissions (from said target device) take place in partial MUX-BUS form, with the advantageous feature that if another separate SELECT had been first sent into the input BUS of the second target device, from an auxiliary origination means, then the next serial target, the second target device will be operated with another MUX-BUS, having received the proper sequence of transmissions from the combined origination of the said auxiliary and first device and thus each of the above target and second target device have the identical plug compatibility as MUX-BUS input and MUX-BUS output and thus require no other controlling signals for the said two digit data transmissions;

and furthermore, a useful simplification allows said SELECT to be chained out from the first target device which allows said first target device, completely controlled by the said originator, to then completely control the second target device means;

(8.) a more complete variation for creating one complete MUX-BUS output of example #7, is an example device MUX-BUS defined output BUS where means for

device output sourcing of said MUX-BUS SELECT signal exists, by re-use of the second arriving transmission (N) to the first device to originate another SELECT, for a completely serial string of what is called MUX-BUS PLUG-ABLE modularity;

(9.) a more complete variation for creating multiple complete MUX-BUS outputs in example #4, an example of device (MUX-BUS defined) multiple output BUSSES where means for device output sourcing of said MUX-BUS SELECT exists, by re-use and collated distribution of each term of the said second arriving transmission **N** individually to each corresponding said individual BUS output;

and furthermore with all previously said in this claim defining a method for PLUG-ABLE interfacing as a BUS to COMPONENT to BUS to COMPONENT serial structure arrangement (as an advantage over the arrangement of controller connected directly to each random system component, in a star-like pattern).

3. For mechanical Computer Sub-systems, with BINARY operation:

A method of positional encoded signal transmission using a singular moving particle mechanical impulse means moving from device to device through a mechanical BUS means comprising;

(a.) providing a synchronizing signal origination means that dispenses a singular field-accelerated particle with a motion vector, and main path, principally induced by the field;

(b.) providing in said origination means a secondary use of the synchronizing signal by positional variation of dispensing causing multiple parallel path differentiation of the signal for transmitting useful information, and with the positional variation substantially orthogonal (normal) to the main path of travel;

(c.) providing a general mechanical computer logic element means and providing positional (spatial) differentiated inlet and outlet path means on said logic element means such that in all cases a moving particle impulse means will enter, interact, and exit as a flow-through function, and subsequently continue transit;

(d.) providing a structure means principally aligned with said accelerating field for aligned attachment of each of said origination means and said logic element means to said accelerating field, and to each other;

(e.) providing basic structural alignment and serial connection relationships between said signal origination means, said transmission path, and said logic means, such that said origination means may usefully encode and transmit the impulse, which is then maintained during transit by the conduit means, and such that useful reception and differentiation of the impulse can be made by said logic means;

(f.) providing a conduit means for unconditional guiding of said impulse for simple offsets in

which signal meanings are maintained between system components, and for useful logical conversions, in which general predetermined signal connections are made;

(g.) providing internally within all device components a means for complying with a unifying rule set for construction and external operation, these being defined under the immediately following claim subsection rule list, using a novel external system rule set called MECHANICAL BINARY BUS:

(1.) a rule for conventional parallel binary coded data transmission to a device using a set of moving particles, to a device where each separate binary code weighted moving particle channel (or guiding conduit) contains a singular moving particle for each instance of a binary one (or set) bit, and with such parallel set of possible ones in the transmitted binary word being reasonably time-coordinated relative to general device and system timing requirements, and;

(2.) a rule for initiating data transmission from devices using a parallel set of strobe signals where such resulting data transmission has the above BINARY-CODED data form.

This sheet reserved for later amended claims for stacked lever register **700** device.

NOTE:

Examiner is requested to suggest additional claim language, for mixed Methods with devices, as appropriate.

Thank you, 01/10/02
RHB

This sheet reserved for later amended claims for stacked lever BUS SWITCH **840** device.

This sheet reserved for later amended claims for BINARY WHEEL flip-flop **400** device, and for BINARY REGISTER **600** device.